

Tensionable textile floor covering

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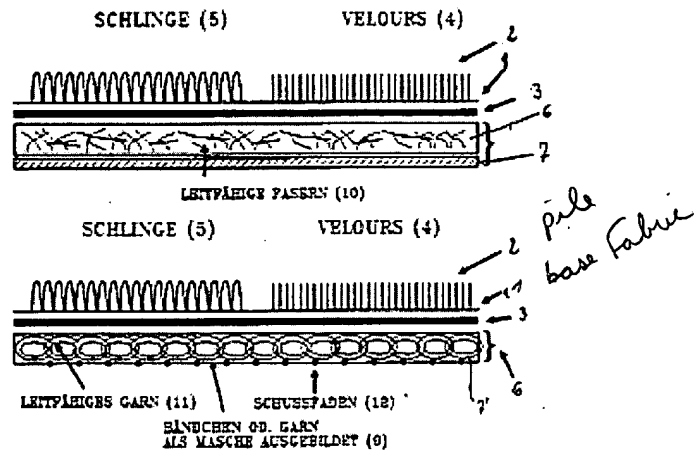
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Abstract of EP0547533

The invention relates to a tensionable textile floor covering which is produced from polymer fibres in the tufting process and consists of a base fabric (1) and a pile (2), which is joined to the base fabric (1) and which covers the base fabric on the tread side, and of a backing layer (6+7). The backing layer is a composite material which consists mainly of a non-woven layer which is bound by a textile binding. Base fabric and backing layer are joined to one another using a technique which does not prevent the recyclability of the floor covering (recyclability).



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Tensionable textile floor covering

Description of EP0547533

The invention concerns a chip cash textile foot floor covering out of Polymerfasern, that is produced in the Tufting-procedure and out of a reason tissue and a Flor, that connected with the reason tissue and that the reason tissue covers on the step side, as well as out of a back layer exists, that connected on the side opposite the Flor ("Rückseite") with the reason tissue and that determines the step comfort.

Textile foot floor coverings of the advancing defined type are designated in the trade generally as a "Tufting-Teppichboden" whereby such carpet ground is sold and transferred as well as railroad ware and as a carpet tile. In the Tufting-carpet, the textile thread is used, usually Polyamid, after the Tuftingverfahren (Nadelflor-technology) into the finished reason tissue. The reason tissue worries at the same time for a dimension stability and the Flor for appearance and a part of the step comfort (cf. to this H. Kirchenberger, TUFTING-TECHNOLOGY, Melland textile report, Heidelberg, 1975).

Further the above-mentioned reason tissues with Flor in well known manner rückseitig with nature rubber, Styrol-Butadien-Latices or Polyurethanen will coat. This layer is designated as a back layer or carpet-Rückenbeschichtung. It is in general 2 to 8 mm thick and carries based on its elastomeren characteristic substantially to the step comfort by. The above-mentioned back layers become as a rule geschäumt and yield then a so-called foam back. Next to the already named step comfort, the foam back worries also for a large temperature isolation and sound isolation and possesses in general also a relatively good service life.

The disadvantages of the well known foam back are to be sure that in that latex manufacture must be taken SELF-SERVICE a considerable environmental stress in purchase, whereby also the air load must be included in the Latexbeschichtung. It appeared that the components of the SELF-SERVICE-Latices with certain persons, especially children, also allergic reactions can evoke. In addition the composition of the Latices this not-recyclefähig makes so that needed carpets are not to be detoxified readily. Finally is also unpleasant that remainders of the latex back is pastes become, whether these or do not remain, on the floor if in a new placing by carpets the old carpet is removed.

It stands accordingly the task of indicating a Textilverbundstoff for foot floor coverings of the from the outset named type, with which deviating of the state of the technology a back layer is available, that altogether with the Textilverbundstoff recyclefähig, detoxifies at least without difficulties and freely is of usual all genes and offers the step comfort one equivalent nevertheless like foam back.

This task is solved in a chip cash textile foot floor covering of the from the outset named type, that is marked, in that the back layer a Verbundstoff is, that consists head proportionate of a fleece layer, und that the fleece layer belonging to the back layer is bound by a textile tie and that under use of a technology not preventing the recycling capacity the foot floor covering reason tissue and back layer connected together.

Preferably all materials are among one another recycling Compatible.

The first invention thought exists therein to replace the latex back by a novel two back, that is to be connected with the raw carpet and the same use characteristics, especially step comfort, yields like well known foams latex back. A further thought is that the materials are voted after expert estimating altogether so on each other, that it minces will can after the use and can be transported in a recycling procedure, therefore for example through mincing, smelt and renewed Extrudieren, into another form, that brings the used raw material to a two utility. Excluded would not be also that the used Polymer-plastic to the Monomer depolymerisiert and subsequently again polymerisiert becomes.

The back consists accordingly of a fleece material, which is connected with a tissue or Gewirke or becomes mixed, by what means the fleece material in along direction or is reinforced in along and breadth direction, as required electrostatically ableitfähig equipped and formed will can correspondingly in Haptik and optics textile. This Verbundstoff can be used as a back layer for textile foot floor coverings as a replacement for the previously usual foam back or compact foam backs without impairing the use characteristics, especially the step comfort. At the same time also the wear is diminished through the

enclosure into a textile connection and the Verarbeitbarkeit, especially the connection to the reason tissue, eases.

Technologies to the connection of the foot floor covering with the back, that a recycling capacity not contrary to state, are for example pasting with polymeren paste of the same Polymerart as well as the remaining foot floor covering, up steppe, technologies well known suturing, etc. whereby materials are used, that do not hinder the recycling capacity.

In order to obtain a sufficient step comfort according to embarrassed situation, is proposed, that the fleece material an areas weight of 100 to 400 g/ms² And a thick of 0.5 until 10mm shows.

In order to equip the fleece material antistatisch, is proposed, it with conductive threads to durchmischen, the one reduction of the surfaces-resistance on at least 10⁹ Cause Ohm. This fleece material yields an erdableitfähigen foot floor covering (z. B. for computer room.) in connection with a conductive carpet construction.

The fleece material can be produced basically manner in more differently. Generally everyone can be used recycled-Compatible types by polymeren threads and thread mixtures. One comes for example from the usual manufacture of spider thread fleece, this in the process steps " opening - mixing - Feinöffnen - fleece development becomes - hardening" into a handelsfähige ware transports.

Come as raw materials both Polyolefine (PP, PE) and Polyamide and Polyester in question, therefore the same materials out of which also the fleece material is produced. Accordingly can both the pole, that reason tissue, that Verbundstoff for the back and the necessary Klebmassen either out of a uniform raw material (z. B. Polypropylen, Polyamid, Polyester) and out of raw material combinations, that are made itself or with the help of suitable additions Compatible and subsequently by mincing in one again extrudierbare form can be transported, produced become.

Further can be used for the named Textilverbundstoff both an unverfestigter and a hardened fleece material. An unverfestigter fleece material can by means of a Nähwirkverfahrens, z. B. through the so-called Maliwatt-procedure, hardens become. It is already hardened also possible, one to process fleece material, that z. B. through mechanical, chemical or thermal procedure steps hardens became. Here are confessed in the field of the mechanical consolidation the needle felt technology, the Vermaschung (z. B. Mali fleece procedure) as well as the air consolidation and water ray consolidation. In the field of the chemical consolidation: consolidation through fluid Binder, through Schaumbinder, paste and Pulverbinder as well as Lösungsmittelbinder. in the field of the thermal consolidation in correspondingly thermoplastic thread material hot air, contact heat with pressure, infrared-Beheizung and a high frequency field can be used for example.

As fleece, also so-called Filamentvliese, that become subdivided in fleece materials formed by remote Filamente (endless thread), so-called spun-bondeds, suit itself next to the spider thread fleece, or however through remote threads after the Melt-Blown-principle formed fleece materials. Also here the hardening of the fleece materials can result after the already described methods.

An especially economical linking of fleece materials can be undertaken into a tissue out of ribbon material. Ribbon material, that is confessed in the textile technology and is used in many felling, is produced as a rule after the flat foil extrusion procedure whereby the extrudierte flat foil is cut in ribbon of corresponding width.

The fleece material can be bound also in a tissue or Gewirke out of Filamentgarn or thread yarn. Under Filamentgarn, one understands a yarn, that consists of several endless threads with or without rotation, whereby the endless threads can have also a texturierte form. In latter, a textile appearance is lent in a Texturierprozess the otherwise very smooth Filamentgarn in that one lends the Filamentgarn a high pad. Also here can be used as raw materials both Polyolefine and Polyamide or Polyester.

Under thread yarns, especially pile thread yarns,, such are understood, produced become that of length corresponding out of threads, that are produced after the Ringspinn- or the Rotorspinn-procedure. Also here Polyolefine (PP, PE), Polyamide suit itself and Polyester as raw materials.

The back layer, with which a fleece material is bound into a textile tie, can be produced after different procedures. As example named would be the Kettenwirkverfahren, the so-called Maliwatt-procedure with shot entry and the needle felt technology.

Both first mentioned procedures work with an along thread system, that gives back layer stability in along direction to the flächigen product. The along thread system consists of the named ribbon material, Filament- or thread yarn and is worked in with an usual stiches development construction. Selectively also a breadth thread system can be brought in in both procedures. This system should raise primarily the stability in breadth direction for a possible later carpet bracing. In second line, the breadth thread system

for textile formation, especially inspection is used. Further the breadth thread system can increase the liability to the raw carpet in special mass if the breadth threads in connection with the fleece are raised to the underside of the raw carpet.

Execution examples of the invention are represented in the drawing. The figures of the drawing show three layers apiece of a Textilverbundstoffes in schematic view, here foot floor covering, in two executions: The schematic representation shows a reason tissue 1 which receives the poles 2 during the Tuftingprozesses. These poles 2 can exist once as a closed loop 5 or also as an aufgeschnittene Noppe (Velours 4).

In place of the back layer usual otherwise out of SELF-SERVICE-latex, a fleece material, vernadelt with a tissue 7 is raised in first version on the raw carpet by means of a Klebmasse 3 (z. B. polymere paste). The aufgenadelte tissue should the fleece material 6 on the one hand the necessary along and Querferfestigkeit and on the other hand a tissue similar appearance lend.

Through Zumischung of conductive threads 10 in the fleece manufacture, the surfaces resistance becomes up $\leq 10^9$ Ohm reduced. The combination out of a conductive two back and a correspondingly equipped Teppichstruktur yields an erdableitfähigen foot floor covering.

A further possibility to the two back manufacture places mix the additional a nichtverfestigten or vorverfestigten fleece material 6 there how in the figure 2 represented. The hardening through a stiches development process can either result after the Malimo-principle or after the Kettenwirk-principle. Through these processes, a stability in along direction is brought in whereby in addition for an increase of the breadth stability and as an artistic component in breadth direction a shot thread 12 can be inserted. An additional binding of conductive yarns or ribbons 11 causes, that the Textilverbundstoff in its surfaces resistance up $\leq 10^9$ Ohm reduced becomes. Also this type of two back yields an erdableitfähigen foot floor covering in combination with a corresponding carpet construction.

Terminating would be referred on that that the materials must be recycling capable and among one another recycling-Compatible. That means either that they consist of the same elements, therefore for example Polypropylen, Polyamid or Polyethylen, or so are conditioned however through so-called Compatibilisizer that they are together vermischbar. It is also possible to combine through so-called Blending (mixing) one certainly quantity at chaste reason material with a corresponding littler quantity of recycling material, in order to improve the stability characteristics.

Next to the execution example, also other textile ties can be indicated how they were named already in the description introduction.

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Claims of EP0547533

1st chip bar textile foot floor covering, that is produced out of Polymerfasern in the Tufting-procedure, and out of a reason tissue (1) and a Flor (2), that connected with the reason tissue (1) and that the reason tissue covers on the step side, as well as out of a back layer (6+7) exists, connected is that on the side opposite the Flor ("Rückseite") with the reason tissue and determines that the step comfort, through it Fleece layer (6) exists

And that the fleece layer belonging to the back layer (6+7) by a textile tie bound is, and that under use of a technology preventing the recycling capacity the foot floor covering reason tissue and back layer did not connect together.

2. Foot floor covering after claim 1, marked, in that the fleece layer (6) in the nichtgefassten condition an areas weight of 100 to 400 g/ms² And a thick of 0.5 to 10 mm shows.

3rd foot floor covering after claim 1 or 2, marked in that the fleece layer is grasped by a stiches product or a tissue in along direction and breadth direction.

4th foot floor covering after claim 1 or 2 or 3, marked in that the fleece layer is mixed with along threads (12).

5th foot floor covering after claim 3, marked in that that is the binding tissue a Drehergewebe.

6th foot floor covering after claim 3, marked in that the stiches product is a chaining or Nähgewirke (7').

7th foot floor covering after claim 3, marked in that the fleece layer (6) is mixed by means of Kettenwirk- and or Maliwattverfahren).

8. foot floor covering after one of the preceding claims, marked in that the fleece layer (6) is bound into a ribbon-tissue or -Gewirke.

9th floor situation after claim 8, marks in that the ribbons for the tissue or Gewirke out of the group of the Polymere Polypropylen, Polyethylen, Polyamid are selected or Polyester.

10th foot floor covering after one of the preceding claims 1 to 8, marked in that the fleece layer is bound into a tissue or Gewirke out of Filamentgarn or thread yarn.

11th foot floor covering after one of the preceding claims, marked in that the fleece layer is chemically hardens before the binding.

12th foot floor covering after one of the preceding claims, marked in that the fleece layer is thermally hardens before the binding.

13th foot floor covering after one of the preceding claims, marked in that the fleece layer is mechanically hardens, for example through Nadelfilz- or Mali fleece technology.

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